Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

27. (Currently Amended) A method of routing a net within a region of an integrated-circuit ("IC") layout, the method comprising:

a) for the net, identifying a route that uses a first path within the region, wherein the first path shares a common region in the IC region with a set of adjacent paths, wherein said set has at least one path and each path in the set is adjacent to the first path;

b) determining whether embedding the route in the region will cause congestion about the first path and the set of paths to exceed a threshold value; and

c) embedding the route for the net based at least partially on a determination that embedding the route in the region will not cause congestion about the first path and the set of paths to exceed the threshold value.

28. (Canceled)

29. (Original) The method of claim 27 further comprising discarding the route if embedding the route causes the congestion about the paths to exceed the threshold value.

30. (Original) The method of claim 27, wherein congestion along the paths includes wireflow along the paths.

31. (Original) The method of claim 30, wherein congestion along the paths further includes blockages of the paths.

32. (Original) The method of claim 27, wherein the set of paths includes a second path, and the threshold value equals the sum of the routing capacities of the first and second paths minus the routing capacity shared between the first and second paths.

33. (Original) The method of claim 32, wherein the first and second paths are diagonal paths that are defined on one routing layer.

34. (Original) The method of claim 33, wherein the first and second paths are in the same direction.

35. (Original) The method of claim 27, wherein the set of paths includes a second path and a third path, and the threshold value equals routing capacity of the first, second, and third paths minus the routing capacity shared among of the first, second, and third paths.

36. (Original) The method of claim 35, wherein the first, second, and third paths are diagonal paths that are defined on one routing layer.

37. (Original) The method of claim 36, wherein the first, second, and third paths are in the same direction.

38. (Original) The method of claim 27, wherein the set of paths includes a second path and a third path, wherein the first and second paths are diagonal paths, and the third path is a Manhattan path, wherein the third Manhattan path represents wireflow in the Manhattan and diagonal directions, wherein the threshold value equals routing capacity of the first, second, and third paths minus the routing capacity shared among of the first, second, and third paths.

39. (Original) The method of claim 27, wherein the set of paths includes second, third, fourth, and fifth adjacent paths, wherein the first through fourth paths are diagonal paths, and the fifth path is a Manhattan path, wherein the fifth path represents wireflow in the

Manhattan and diagonal directions, wherein the threshold value equals routing capacity of the first through fifth paths minus the routing capacity shared among of the first through fifth paths.

40. (Original) The method of claim 27, wherein said determination of whether to embed the route is formulated as a constraint of a linear programming problem.

41. (Currently Amended) A method of routing nets within a region of an integrated-circuit ("IC") layout, the method comprising:

a) partitioning the IC region into a plurality of sub-regions, wherein a plurality of paths exist between the sub-regions, each path representing a plurality of routing tracks, and at least a first path shares routing tracks with a set of paths;

b) for the net, identifying a route that uses the first path;

c) determining whether embedding the route will cause congestion along the first path and the set of paths to exceed ~~determining whether to embed the route at least partially based on~~ the number of tracks available along the first path and the set of paths; and

d) embedding the route for the net based at least partially on a determination that embedding the route will not cause the congestion along the first path and the set of paths to exceed the number of tracks available along the first path and the set of paths.

42. (Currently Amended) A method of routing nets within a region of an integrated-circuit ("IC") layout, the method comprising:

a) partitioning the IC region into a plurality of sub-regions, wherein a plurality of paths exist between the sub-regions, each path representing a plurality of routing tracks, and at least a first path shares routing tracks with a set of paths;

b) for the net, identifying a route that uses the first path;

c) determining whether to embed the route at least partially based on the number of tracks available along the first path and the set of paths;

~~.The method of claim 41,~~ wherein the number of available tracks equals the number of tracks along the first path and along the set of paths minus the number of tracks shared between the first path and the set of paths minus the number of tracks used and blocked along the first path and the set of paths.

43. (Original) The method of claim 42, wherein the number of tracks available along the first path and the set of paths is not the only criteria for determining whether to embed the route.

44. (Original) The method of claim 41, wherein the set of paths includes a second path that represents routing tracks on a routing layer that also includes at least some of the routing tracks of the first path.

45. (Original) The method of claim 44, wherein the first and second paths are diagonal paths that are in the same direction.

46. (Original) The method of claim 44, wherein the first path is a diagonal path and the second path is a Manhattan path.

47. (Original) The method of claim 41, wherein the set of paths includes a second path and a third path, wherein the first, second, and third paths are diagonal paths that are in the same direction and that are defined on one routing layer.

48. (Original) The method of claim 41, wherein the set of paths includes a second path and a third path, wherein the first and second paths are diagonal paths, and the third path is a Manhattan path, wherein the third Manhattan path represents a plurality of tracks in the Manhattan and diagonal directions.

49. (Original) The method of claim 41, wherein the set of paths includes second, third, fourth, and fifth paths, wherein the first through fourth paths are diagonal paths, and the fifth path is a Manhattan path, wherein the fifth path represents a plurality of tracks in the Manhattan and diagonal directions.

50. (Currently Amended) A computer readable medium comprising a computer program having executable code, the computer program for routing a net within a region of an integrated-circuit ("IC") layout, the computer program comprising:

a) a first set of instructions for identifying a route for the net, said route using a first path within the region, wherein the first path shares a common region in the IC region with a set of adjacent paths, wherein said set has at least one path and each path in the set is adjacent to the first path;

b) a ~~first~~ second set of instructions for determining whether embedding the route in the region will cause congestion about the first path and the set of paths to exceed a threshold value; and

c) a third set of instructions for embedding the route for the net based at least partially on a determination that embedding the route in the region will not cause congestion about the first path and the set of paths to exceed the threshold value.

51. (Currently Amended) The computer readable medium of claim 50 ~~further comprising a~~ wherein the third set of instructions comprises a fourth set of instructions for discarding the route when embedding the route causes the congestion about the paths to exceed the threshold value.

52. (Original) The computer readable medium of claim 50, wherein congestion along the paths includes wireflow along the paths.

53. (Original) The computer readable medium of claim 52, wherein congestion along the paths further includes blockages of the paths.

54. (Original) The computer readable medium of claim 50, wherein the set of paths includes a second path, and the threshold value equals the sum of the routing capacities of the first and second paths minus the routing capacity shared between the first and second paths.

55. (Original) The computer readable medium of claim 50, wherein the set of paths includes a second path and a third path, and the threshold value equals routing capacity of the first, second, and third paths minus the routing capacity shared among of the first, second, and third paths.

56. (Original) The computer readable medium of claim 50, wherein the set of paths includes a second path and a third path, wherein the first and second paths are diagonal paths, and the third path is a Manhattan path, wherein the third Manhattan path represents wireflow in the Manhattan and diagonal directions, wherein the threshold value equals routing capacity of the first, second, and third paths minus the routing capacity shared among of the first, second, and third paths.

57. (Original) The computer readable medium of claim 50, wherein the set of paths includes second, third, fourth, and fifth adjacent paths, wherein the first through fourth paths are diagonal paths, and the fifth path is a Manhattan path, wherein the fifth path represents wireflow in the Manhattan and diagonal directions, wherein the threshold value equals routing capacity of the first through fifth paths minus the routing capacity shared among of the first through fifth paths.